

NOTES ON BIRDS OBSERVED IN THE VICINITY OF TABORA, TANZANIA WITH SPECIAL REFERENCE TO BREEDING DATA

by

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SUMMARY

1. A defined status is allocated to 297 avian species recorded within a 20 mile radius of the town of Tabora in Tanzania.
2. General descriptions are given of the areas in which the observations were made.
3. Data on the breeding seasons ("corrected" to months in which eggs have been found) and, in some cases, habits of 98 species are given.
4. The extent to which the data conform with Moreau's generalisations is briefly discussed.

INTRODUCTION

Apart from two periods of home leave (December and January 1961/1962; May to September 1964) and shorter periods of local leave when I visited other parts of East Africa, I was resident in Tabora, Tanzania, where I was teaching Biology at Tabora Boys' School, from early October 1959 until early December 1966. This paper summarizes most of the observations that I made on birds during this time.

All the birds that I have recorded personally within a twenty mile radius of Tabora are given in the annotated list that follows. Records for Sanderling and Terek Sand-piper additional to those published previously (Reynolds 1965a) are given. I have given each species a status defined as follows:

- R+ Considered to be resident. Definite breeding records.
- R Considered to be resident. Presumed, but not proved, to breed.
- B Breeds, but uncertain whether resident throughout the year.
- B? Probably breeds, but uncertain whether resident throughout the year.
- BM Breeds, but absent for part of the year.
- B?M Probably breeds, but absent for part of the year.
- OB Breeds, but species uncommon in the area.
- F Frequently seen, with no clear cut seasonal peaks. Includes some species which probably breed but for which there is insufficient evidence to warrant this assumption.
- M Passage migrants and non-breeding visitors.
- OM Migrants which appear to be uncommon.
- O Occasional or accidental visitors.
- ?? Status not clear. Includes species that are seldom seen but are probably resident breeding species.

No status is given for species not seen around Tabora but recorded from either the Wembere or the Ugalla River Game Reserve although breeding records from these areas are included in the analysis of breeding data.

The numbers and most of the English names follow Mackworth-Præd and Grant (1955, 1957) as do scientific names except as follows: Purple Heron is placed in *Ardea* as in Williams (1963). Bock's (1958) classification of the larger plovers is used, and the Yellow Wagtails (695-701) are treated as a single species as in Williams (1963).

The list is in no sense a final check-list of Tabora birds as I have not attempted to amplify it from the, mostly, unpublished records of others who have studied birds in the area. Thus, for example, the Narina Trogon, *Apaloderma narina* (Stephens) and the Rosy-breasted Longclaw, *Macronyx ameliae* de Tarragon, were both collected by Mr. I. H. Dillingham (*in litt.*). I do not think, however, that I can have missed many resident birds in the areas which I visited regularly although there may well be small local patches of habitat suitable for species that I did not see; one such likely area is where the Igombe River runs into Igombe Dam.

A few birds not identified specifically are included in the list. In addition to these I fairly often saw a large species of *Cisticola* in very long grass areas that I was unable to identify, while at least one of the larger woodpeckers was frequently seen in the Simbo Forest Reserve, but never well enough for its identifying features to be noted. No birds were collected but my examination of skins in the collection of the Tabora Game Department aided me in the identification of several "difficult" species. A total of 297 species, of which 88 definitely bred, were recorded around Tabora; a further 41 species were recorded from the Wembere and Ugalla River Game Reserve.

BIAS IN THE OBSERVATIONS

The data recorded in this paper is biased in various ways though it is likely that, over the period concerned, the different sources of bias largely cancel each other out. The chief sources of bias are:

- (1) Lack of experience at various times meant that behavioural clues indicating breeding were not always recognized.
- (2) Most observations had to be made in the afternoon when, in general, display etc. are less conspicuous than in the early morning.
- (3) As I gained experience I had a fairly good idea as to what species I could expect to find nesting in given places at a given time of year. More attention to these areas in their "off-seasons" might have added extra data.
- (4) Primarily I was searching for nests in order to take photographs of the parent birds. This meant that frequently much time was spent in locating the territories and nests of particular species. When these had rather restricted habitat requirements my overall tally naturally fell.

GENERAL DESCRIPTION OF THE STUDY AREA

Breeding data given in this paper were obtained from three localities: (a) around Tabora, (b) in the Ugalla River Game Reserve, and (c) on part of the Wembere Steppe.

(a) Tabora

The town of Tabora is at an altitude of 4150 feet above sea level and is almost exactly 5°S. The recorded mean annual temperature is 22.8°C, a daily range of about 17°C being usual; frosts never occur although there are occasional hail storms.

There is a single rainy season from late November to early May with some tendency for a break in late December and January (not indicated by monthly rainfall figures). In general the rain falls in heavy thunderstorms that are often very local especially at the beginning and end of the rainy season. Table 1 shows the difference in the monthly figures as recorded at two stations (marked a and b on Table 1) in Tabora approximately 3 miles apart. The early storms of October and, more rarely, September are very local, making little, if any, extra water available for plant growth. Table 2 shows that there is considerable variation in the annual rainfall and that considerably higher than average rainfall occurred in 1960-1964.

The country around Tabora has been described as "steppe-like" though this term is hardly applicable to a region that is extensively wooded. One noteworthy feature of these deciduous woodlands, dominated by species of *Brachystegia*, is that not all the trees shed their leaves at the same time and that there is a very marked "flush" of new leaves that is quite apparent in August long before the onset of the rains. The general features of the *Brachystegia* (or *miombo*) woodlands have been described by Burt (1942) and Moreau (1966), but are not summarized here as most of my observations were made within a five mile radius of Tabora where the country is a mosaic of cultivation and regenerating woodland, interspersed with seasonally flooded areas most of which are used for rice growing. Rocky hills are a prominent feature of the landscape; the tops of many of these are bare

TABLE I
MONTHLY RAINFALL FIGURES FOR TABORA 1959-1966

	1959		1960		1961		1962		1963		1964		1965		1966	
	mm.		mm.		mm.		mm.		mm.		mm.		mm.		mm.	
J	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
F	112.2	N.R.	186.1	164.4	55.0	164.8	186.0	163.6	229.9	211.5	207.1	189.7	8.1	45.0	13.7	112.3
M	129.5	N.R.	293.0	199.6	226.0	110.8	93.5	94.5	184.9	190.7	250.9	163.9	235.9	211.5	12.3	124.8
M	128.7	N.R.	159.7	137.4	118.5	112.3	252.2	180.3	135.0	189.0	244.0	232.9	246.8	174.2	163.8	182.1
A	13.0	N.R.	203.1	187.2	68.0	83.8	121.3	135.4	114.0	109.7	135.6	147.3	95.2	87.4	79.8	63.0
M	13.2	N.R.	Nil	Nil	Nil	Nil	51.1	58.4	31.9	27.4	1.9	3.3	Nil	Nil	Nil	Nil
J	Nil	N.R.	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
J	Nil	N.R.	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.3	Nil	Nil	Nil	Nil	Nil
A	Nil	N.R.	Nil	Nil	Nil	Nil	6.0	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1.0	Nil
S	13.0	0.8	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	3.1	21.0	25.7	Nil	Nil
O	39.0	6.9	178.7	N.R.	Nil	34.8	92.7	63.5	Nil	Nil	Nil	1.3	16.0	8.6	25.6	10.2
N	117.4	117.3	N.R.	134.1	335.1	369.1	158.8	131.0	237.4	265.7	68.9	64.5	122.5	52.3	36.3	36.6
D	107.5	179.8	N.R.	184.6	213.3	186.2	221.2	235.7	81.2	109.2	144.4	119.1	259.7	195.5	154.5	154.5
Total	675.5	701.4	1339.3	1186.0	1015.9	1061.8	1182.8	1062.4	1024.3	1101.2	1053.1	925.1	1007.2	800.2	487.0	683.3
Av. a & b	687.4		1262.7		1036.4		1122.6		1062.8		989.1		903.7		585.3	

TABLE 2
YEARLY RAINFALL FIGURES FOR TABORA 1950-1966

Year	Rainfall		Source
	mm.	in.	
1950	888.4	34.18	Handbook of Tanganyika
1951	1297.0	51.08	
1952	756.0	29.76	
1953	743.9	29.29	
1954	726.8	28.61	
1955	736.7	29.01	
1956	804.4	31.67	
1957	872.2	34.34	Beekeeping Section Forest Division Tabora
1958	715.4	28.16	
1959	687.4	27.06	Table 1
1960	1262.7	49.73	
1961	1036.4	40.49	
1962	1122.6	44.22	
1963	1062.8	41.85	
1964	989.1	38.94	
1965	903.7	35.58	
1966	585.3	23.04	
Average over 48 years	875.0	34.45	Handbook of Tanganyika

apart from odd tussocks of grass and patches of *Vellozia*. Comparatively undisturbed *miombo* comes to within about 10 miles of the town along the track leading to Itigi.

Between the town and the aerodrome there was a comparatively large block of regenerating woodland that had been largely undisturbed for about 15 years. This extended from the west side of Aerodrome Road to the foot of a rocky hill that ran parallel to the road for about half a mile. On the other side of the road there were several sand quarries, a Forest Nursery and several acres fenced off from cattle and cultivation by the Bee-keeping Section of the Forest Division. This general area (Quarry Area) provided much of the breeding data for Tabora. In 1965 and 1966 cultivation started creeping into this area and many of its "best" parts had been destroyed when I left in 1966.

Three dams (= reservoirs) near to Tabora account for the good numbers of water birds and waders on the annotated list. Igombe Dam, the largest of the three, is some 12 miles from Tabora. Kazima Dam, 5 miles away, is smaller but is an easier place at which to watch birds. When I first saw Kazima Dam in October 1959 it was a pool about half an acre in extent surrounded by bare dry mud flats. It filled during the following rainy season and thereafter provided a large extent of shallow swamp in which thick patches of ambatch, *Aeschynomene elaphroxylon* (Guill & Perr.) Taub. and bulrushes developed. These provided a roosting place for Cattle Egrets drawn from a very large area around the town; flight lines were detected at least 10 miles from the dam. Long-tailed Cormorants from Igombe Dam also used to roost at Kazima Dam. Rufita Dam, much smaller than the other two and situated right on the outskirts of the town, was a good place for birds when I first arrived in Tabora, but it is now far too disturbed.

(b) The Ugalla River Game Reserve

The general ecology of this most attractive game reserve has been described by Thomas (1961). My visits to the Ugalla, with the exception of one trip in February 1965, were all between July and November, mostly at weekends. Apart from one White-breasted Tit's nest and one Green-winged Pytilia's nest all the nests found were of ground-nesting species on the dry flood plains. One small breeding colony of Open-billed Storks and Great White Egrets was known but was never visited while occupied, presumably between March and June.

(c) The Wembere Steppe

The parts of the Wembere that I visited consisted largely of Flood Plain Grasslands bordered by dense *Acacia* scrub on the eastern side. All this area, between Sakamaliwa and Lolanguru, is subject to seasonal flooding but the rains of 1959-1963 inundated vast areas of the plains, including isolated patches of *Acacia* growing on slightly higher ground normally more or less free from flooding. For several years extensive swamps persisted throughout the dry season but by 1965 most of these had dried out. In all years large open areas of dry mud flats and sandy plains formed during the dry season; my observations were centred on the plovers, coursers and pratincoles that bred on these.

I was never fortunate enough to see, during the height of the breeding season in March and April, the vast mixed colony of herons, Open-billed Storks, Wood-ibis, Sacred Ibis, Glossy Ibis and African Spoonbills discovered by Mr. B. W. Stronach. As he is describing this elsewhere (Stronach 1968) I have included no breeding data from this colony in this account. I saw no signs of the colony being used in March 1964; in 1965 I accompanied Mr. S. M. Moore-Gilbert in a flight over the whole length of the Wembere when we again failed to see any signs of breeding.

Annotated list of species recorded within a 20 mile radius of Tabora. Additional species recorded from the Wembere and the Ugalla River Game Reserve are listed separately at the end of this list.

Family PODICIPIDAE (Grebes)		
2	Great Crested Grebe <i>Podiceps cristatus</i> Linnaeus	O
	My only record is of three at Rufita Dam on 23rd April, 1960.	
4	Little Grebe <i>Polioccephalus ruficollis</i> (Pallas)	R+
Family PHALACROCORACIDAE (Cormorants)		
27	Long-tailed Cormorant <i>Phalacrocorax africanus</i> (Gmelin)	R+
Family ANHINGIDAE (Darters)		
28	Darter <i>Anhinga rufa</i> (Lacépède & Daudin)	R+
Family PELECANIDAE (Pelicans)		
31	White Pelican <i>Pelecanus onocrotalus</i> Linnaeus	O
32	Pink-backed Pelican <i>Pelecanus rufescens</i> Gmelin	O
Family ARDEIDAE (Herons, Egrets and Bitterns)		
33	Grey Heron <i>Ardea cinerea</i> Linnaeus	O
34	Black-headed Heron <i>Ardea melanocephala</i> Vigors & Children	R
35	Goliath Heron <i>Ardea goliath</i> Cretzschmar	O
36	Purple Heron <i>Ardea purpurea</i> Linnaeus	O
37	Great White Egret <i>Casmerodius albus</i> (Linnaeus)	F
39	Black Heron <i>Melanophox ardesiaca</i> (Wagler)	O
40	Little Egret <i>Egretta garzetta</i> (Linnaeus)	F
42	Cattle Egret <i>Bubulcus ibis</i> (Linnaeus)	M
43	Squacco Heron <i>Ardeola ralloides</i> (Scopoli)	F
45	Green-backed Heron <i>Butorides striatus</i> (Linnaeus)	O
47	Rufous-bellied Heron <i>Erythrocnus rufiventris</i> (Sundevall)	F
	Williams (1963) states "... occurs very uncommonly in swamps in Uganda and Tanganyika ...". I frequently flushed individuals from lush vegetation at the edge of Kazima Dam.	
48	Night Heron <i>Nycticorax nycticorax</i> (Linnaeus)	F
50	Little Bittern <i>Ixobrychus minutus</i> (Linnaeus)	??
51	Dwarf Bittern <i>Ardeirallus sturmi</i> (Wagler)	??
Family SCOPIIDAE (Hammerkop)		
53	Hammerkop <i>Scopus umbretta</i> (Gmelin)	R+
Family CICONIIDAE (Storks)		
55	White Stork <i>Ciconia ciconia</i> (Linnaeus)	OM
56	Black Stork <i>Ciconia nigra</i> (Linnaeus)	OM
	My only record is of one at Igombe Dam on 20th March, 1960.	
58	Abdim's Stork <i>Sphenorhynchus abdimii</i> (Lichtenstein)	M
59	Open-bill <i>Anastomus lamelligerus</i> Temminck	O
60	Saddle-bill <i>Ephippiorhynchus senegalensis</i> (Shaw)	O
61	Marabou <i>Leptoptilos crumeniferus</i> (Lesson)	F
62	Wood-ibis or Yellow-billed Stork <i>Ibis ibis</i> (Linnaeus)	F
Family PLATALEIDAE (Ibises and Spoonbills)		
63	Sacred Ibis <i>Threskiornis aethiopicus</i> (Latham)	F
65	Hadada <i>Hagedashia hagedash</i> (Latham)	O
68	Glossy Ibis <i>Plegadis falcinellus</i> (Linnaeus)	F
70	African Spoonbill <i>Platalea alba</i> Scopoli	F

Family	PHOENICOPTERIDAE (Flamingos)		
72	Lesser Flamingo <i>Phoeniconaias minor</i> (Geoffroy)		O
Family	ANATIDAE (Ducks and Geese)		
74	White-backed Duck <i>Thalassornis leuconotus</i> Eyton		F
77	Southern Pochard <i>Aythya erythrophthalma</i> (Wied)		O
88	Garganey <i>Anas querquedula</i> Linnaeus		M
	Earliest date: 23rd October, 1959; latest date: 18th March, 1960.		
90	Hottentot Teal <i>Anas punctata</i> Burchell		F
91	Red-bill <i>Anas erythrorhyncha</i> Gmelin		F
94	White-faced Tree-duck <i>Dendrocygna viduata</i> (Linnaeus)		O
95	Fulvous Tree-duck <i>Dendrocygna bicolor</i> (Vieillot)		O
97	Pygmy Goose <i>Nettapus auritus</i> (Boddaert)		F
98	Knob-billed Goose <i>Sarkidiornis melanotos</i> (Pennant)		F
99	Egyptian Goose <i>Alopochen aegyptiacus</i> (Linnaeus)		F
100	Spur-winged Goose <i>Plectropterus gambensis</i> (Linnaeus)		F
Family	SAGITTARIIDAE (Secretary Bird)		
103	Secretary Bird <i>Sagittarius serpentarius</i> (Miller)		O
	My only records are of a single bird near Kazima Dam on 28th October and 1st November, 1959.		
Family	FALCONIDAE (Vultures, Eagles, Falcons and Hawks)		
107	White-backed Vulture <i>Pseudogyps africanus</i> (Salvadori)		R
109	White-headed Vulture <i>Trigonoceps occipitalis</i> (Burchell)		R+
111	Hooded Vulture <i>Necrosyrtes monachus</i> (Temminck)		R
113	Lanner <i>Falco biarmicus</i> Temminck		??
115	Hobby <i>Falco subbuteo</i> Linnaeus		OM
122	Red-necked Falcon <i>Falco chicquera</i> (Daudin)		F
123	Kestrel <i>Falco tinnunculus</i> Linnaeus		O
130	Cuckoo Falcon <i>Aviceda cuculoides</i> Swainson		O
132	Kite <i>Milvus migrans</i> (Boddaert)		R
133	Black-shouldered Kite <i>Elanus caeruleus</i> (Desfontaines)		R+
139	Tawny Eagle <i>Aquila rapax</i> (Temminck)		R
142	Wahlberg's Eagle <i>Aquila wahlbergi</i> Sundavall		O
150	Lizard Buzzard <i>Kaupifalco monogrammicus</i> (Temminck)		F
153	Brown Harrier-eagle <i>Circus cinereus</i> Vieillot		O
	My only record is of one near Igombe Dam on 12th June, 1960.		
154	Black-chested Harrier-eagle <i>Circus pectoralis</i> Smith		R+
159	Bateleur <i>Terathopus ecaudatus</i> (Daudin)		F
160	Fish Eagle <i>Circus vocifer</i> (Daudin)		R+
163	Steppe Buzzard <i>Buteo vulpinus</i> (Gloger)		OM
176	Shirkra <i>Accipiter badius</i> (Gmelin)		R
178	Gabar Goshawk <i>Micronisus gabar</i> (Daudin)		R+
179/180	Chanting Goshawk <i>Melierax</i> sp		F
183	Pallid Harrier <i>Circus mcraourus</i> (Gmelin)		M
184	Marsh Harrier <i>Circus aeruginosus</i> (Linnaeus)		M
185	Harrier-hawk <i>Polyboroides typus</i> Smith		O
	My only record is of one on the outskirts of Tabora on 27th May, 1960.		
186	Osprey <i>Pandion haliaetus</i> (Linnaeus)		F
Family	PHASIANIDAE (Game-birds)		
191	Coqui Francolin <i>Francolinus coqui</i> (Smith)		??
198	Shelley's Francolin <i>Francolinus shelleyi</i> O. Grant		??
	Birds seen had the characters of the bird described in Mackworth-Praed and Grant (1955) as <i>F. afer</i> Latham. The various East African forms of this bird are now regarded as races of <i>F. shelleyi</i> (Williams, 1967).		
203	Hildebrandt's Francolin <i>Francolinus hildebrandti</i> Cabanis		R+
208	Red-necked Spurfowl <i>Pternistis cranchii</i> (Leach)		R+
212	Harlequin Quail <i>Coturnix delegorguei</i> Delegorgue		??
215	Helmeted Guinea-fowl <i>Numida mitrata</i> Pallas		F
Family	RALLIDAE (Rails, Crakes and Moorhens)		
222	Kaffir Rail <i>Rallus caerulescens</i> Gmelin		??
224	African Crake <i>Crecopsis egregia</i> (Peters)		??
225	Black Crake <i>Limnocorax flavirostra</i> (Swainson)		R
228	Lesser Spotted Crake <i>Porzana pusilla</i> (Pallas)		??
237	Purple Gallinule <i>Porphyrio alba</i> (White)		R
238	Allen's Gallinule <i>Porphyryula alleni</i> (Thomson)		R

240	Lesser Moorhen <i>Gallinula angulata</i> Sundevall	R +
242	Red-knobbed Coot <i>Fulica cristata</i> Gmelin	O
Family	BALEARICIDAE (Cranes)	
245	South African Crowned Crane <i>Balearica regulorum</i> (Bennett)	O
Family	OTIDIDAE (Bustards)	
258	Black-bellied Bustard <i>Lissotis melanogaster</i> (Rüppell)	??
Family	BURHINIDAE (Thicknees)	
262	Spotted Thicknee <i>Burhinus capensis</i> (Lichtenstein)	R +
Family	JACANIDAE (Jacanas)	
264	Jacana <i>Actophilornis africanus</i> (Gmelin)	R +
265	Smaller Jacana <i>Microparra capensis</i> (Smith)	R
Family	CHARADRIIDAE (Plovers)	
266	Ringed Plover <i>Charadrius hiaticula</i> Linnaeus	M
271	Kittlitz's Sand-plover <i>Charadrius pecuarius</i> Temminck	BM
272	Three-banded Plover <i>Charadrius tricollaris</i> Vieillot	O
	My only record is of one at Kazima Dam on 13th October, 1959.	
275	Great Sand-plover <i>Charadrius leschenaultii</i> Lesson	O
277	Caspian Plover <i>Charadrius asiaticus</i> Pallas	O
281	Crowned Lapwing <i>Vanellus coronatus</i> (Boddaert)	O
282	Senegal Plover <i>Vanellus lugubris</i> Lesson	O
287	Blacksmith Plover <i>Vanellus armatus</i> (Burchell)	O
291	Wattled Plover <i>Vanellus senegallus</i> (Linnaeus)	M
293	Long-toed Lapwing <i>Vanellus crassirostris</i> (Hartlaub)	O
295	Avocet <i>Recurvirostra avosetta</i> Linnaeus	O
	My only record is of two at Kazima Dam on 23rd May, 1962.	
296	Black-winged Stilt <i>Himantopus himantopus</i> (Linnaeus)	F
Family	ROSTRATULIDAE (Painted Snipe)	
297	Painted Snipe <i>Rostratula benghalensis</i> (Linnaeus)	F
Family	SCOLOPACIDAE (Snipes)	
298/300	Snipe <i>Capella</i> sp (probably <i>gallinago</i>)	M
299	Great Snipe <i>Capella media</i> (Latham)	M
303	Curlew Sandpiper <i>Calidris testacea</i> (Pallas)	M
305	Little Stint <i>Calidris minuta</i> (Leisler)	M
307B	Broad-billed Sandpiper <i>Limicola falcinellus</i> (Pontopidan)	O
208	Sanderling <i>Crocethia alba</i> (Pallas)	O
	Additional records: one at Kazima Dam on 30th September and 3rd October, 1966.	
309	Ruff <i>Philomachus pugnax</i> (Linnaeus)	M
311	Terek Sandpiper <i>Xenus cinereus</i> (Güldenstädt)	O
	Additional record: one at Kazima Dam on 3rd October, 1966.	
312	Common Sandpiper <i>Tringa hypoleucos</i> Linnaeus	M
313	Green Sandpiper <i>Tringa ochropus</i> Linnaeus	OM
314	Wood Sandpiper <i>Tringa glareola</i> Linnaeus	M
315	Redshank <i>Tringa totanus</i> (Linnaeus)	OM
317	Marsh Sandpiper <i>Tringa stagnatilis</i> (Bechstein)	M
318	Greenshank <i>Tringa nebularia</i> (Gunnerus)	M
319	Black-tailed Godwit <i>Limosa limosa</i> (Linnaeus)	OM
321	Curlew <i>Numenius arquata</i> (Linnaeus)	OM
322	Whimbrel <i>Numenius phaeopus</i> (Linnaeus)	OM
Family	PHALAROPIDAE (Phalaropes)	
323	Red-necked Phalarope <i>Phalaropus lobatus</i> (Linnaeus)	O
Family	GLAREOLIDAE (Coursers and Pratincoles)	
326	Temminck's Courser <i>Cursorius temminckii</i> Swainson	O
328	Heuglin's Courser <i>Hemerodromus cinctus</i> Heuglin	R +
329	Violet-tipped Courser <i>Rhinoptilus chalcopterus</i> (Temminck)	BM
330	Pratincole <i>Glareola pratincola</i> (Linnaeus)	F
Family	LARIDAE (Gulls and Terns)	
342	Grey-headed Gull <i>Larus cirrocephalus</i> Vieillot	O
361	White-winged Black Tern <i>Chlidonias leucoptera</i> (Temminck)	M
362	Whiskered Tern <i>Chlidonias hybrida</i> (Pallas)	M
Family	TURNICIDAE (Button-quails)	
365	Button-quail <i>Turnix sylvatica</i> (Desfontaine)	F

Family COLUMBIDAE (Pigeons)		
379	Speckled Pigeon <i>Columba guinea</i> Linnaeus	R
386	Red-eyed Dove <i>Streptopelia semitorquata</i> (Rüppell)	R
388	Ring-necked Dove <i>Streptopelia capicola</i> (Sundevall)	R+
392	Laughing Dove <i>Stigmatopelia senegalensis</i> (Linnaeus)	R+
393	Namaqua Dove <i>Oena capensis</i> (Linnaeus)	OB
397	Emerald-spotted Wood-dove <i>Turtur chalcospilos</i> (Wagler)	R+
401	Green Pigeon <i>Treron australis</i> (Linnaeus)	F
Family CUCULIDAE (Cuckoos)		
413	Great Spotted Cuckoo <i>Clamator glandarius</i> (Linnaeus)	B?M
415	Black-and-White Cuckoo <i>Clamator jacobinus</i> (Boddaert)	B?
417	Didric Cuckoo <i>Chrysococcyx capius</i> (Boddaert)	B?
418	Klaas' Cuckoo <i>Chrysococcyx klass</i> (Stephens)	B?
423	White-browed Coucal <i>Centropus superciliosus</i> Hemprich & Ehrenberg	R+
Family MUSOPHAGIDAE (Turacos)		
434	Violet-crested Turaco <i>Gallirex porphyreolophus</i> (Vigors)	R
441	Bare-faced Go-Away-Bird <i>Gymnoschizorhis personata</i> (Rüppell)	R+
Family PSITTACIDAE (Parrots)		
449	Brown Parrot <i>Poicephalus meyeri</i> (Cretzschmar)	R
Family CORACIIDAE (Rollers)		
457	European Roller <i>Coracias garrulus</i> Linnaeus	M
460	Lilac-breasted Roller <i>Coracias caudata</i> Linnaeus	F
461	Rufous-crowned Roller <i>Coracias naevia</i> Daudin	OM
463	Broad-billed Roller <i>Eurystomus glaucurus</i> (Müller)	F
Family ALCEDINIDAE (Kingfishers)		
465	Pied Kingfisher <i>Ceryle rudis</i> (Linnaeus)	R+
470	Malachite Kingfisher <i>Corythornis cristata</i> (Pallas)	R
471	Pigmy Kingfisher <i>Ispidina picta</i> (Boddaert)	R+
476	Brown-hooded Kingfisher <i>Halcyon albiventris</i> (Scopoli)	R
477	Grey-headed Kingfisher <i>Halcyon leucocephala</i> (Müller)	R+
479	Striped Kingfisher <i>Halcyon chelicuti</i> (Stanley)	??
Family MEROPIIDAE (Bee-eaters)		
481	Bee-eater <i>Merops apiaster</i> Linnaeus	M
488	Little Bee-eater <i>Melittophagus pusillus</i> (Müller)	R+
496	Swallow-tailed Bee-eater <i>Dicrocercus hirundineus</i> (Lichtenstein)	??
Family BUCEROTIDAE (Hornbills)		
504	Grey Hornbill <i>Tockus nasutus</i> (Linnaeus)	F
505	Red-billed Hornbill <i>Tockus erythrorhynchus</i> (Temminck)	F
507	Von Der Decken's Hornbill <i>Tockus deckeni</i> (Cabanis)	F
509	Crowned Hornbill <i>Tockus alboterminatus</i> (Büttikorf)	F
Family UPUPIDAE (Hoopoes)		
518	South African Hoopoe <i>Upupa africana</i> Bechstein	BM
Family PHOENICULIDAE (Wood-hoopoes and Scimitar-bills)		
519	Green Wood-hoopoe <i>Phoeniculus purpureus</i> (Miller)	R+
526	Scimitar-bill <i>Rhinopomastus cyanomelas</i> (Vieillot)	R+
Family STRIGIDAE (Owls)		
528	Barn Owl <i>Tyto alba</i> (Scopoli)	R
534	Scops Owl <i>Otus scops</i> (Linnaeus)	??
536	White-faced Scops Owl <i>Otus leucotis</i> (Temminck)	??
543	Spotted Eagle-owl <i>Bubo africanus</i> (Temminck)	R+
Family CAPRIMULGIDAE (Nightjars)		
551	Fiery-necked Nightjar <i>Caprimulgus fervidus</i> Sharpe	R+
554	Freckled Nightjar <i>Caprimulgus tristigma</i> Rüppell	R+
560	Gabon Nightjar <i>Caprimulgus fossi</i> Hartlaub	R+
564	Pennant-winged Nightjar <i>Semeiophorus vexillarius</i> Gould	O
	My only record is of one near Tabora on 28th December, 1959.	
Family CAPITONIDAE (Barbets)		
575	Black-collared Barbet <i>Lybius torquatus</i> (Dumont)	R+
584	Spotted-flanked Barbet <i>Tricholaema lacrymosum</i> Cabanis	R+
594	Red-fronted Tinker-bird <i>Pogoniulus pusillus</i> (Dumont)	M
600	Levaillant's Barbet <i>Trachyphonus vaillantii</i> Ranzani	O
	My only record is of one near Igombe Dam on 12th June, 1960.	

Family	INDICATORIDAE (Honey-Guides)		
605	Black-throated Honey-Guide <i>Indicator indicator</i> (Spartman)		R
Family	PICIDAE (Woodpeckers)		
623	Cardinal Woodpecker <i>Dendropicos fuscescens</i> (Vieillot)		R
Family	APODIDAE (Swifts)		
643	Little Swift <i>Apus affinis</i> (Gray)		R+
646	Palm Swift <i>Cypsiurus parvus</i> (Lichtenstein)		R
Family	EURLAIMIDAE (Broadbills)		
650	African Broadbill <i>Smithornis capensis</i> (Smith)		B
Family	ALAUDIDAE (Larks)		
660	Flappet-lark <i>Mirafrja rufocinnamomea</i> (Salvadori)		R
682	Fischer's Sparrow-lark <i>Eremopterix leucopareta</i> (Fischer & Reichenow)		R+
Family	MOTACILLIDAE (Wagtails)		
691	African Pied Wagtail <i>Motacilla aguimp</i> Dumont		R+
695-701	Yellow Wagtail <i>Budytes flavus</i> (Linnaeus)		M
706	Richard's Pipit <i>Anthus novaesea landiae</i> Gmelin		
708	Tree Pipit <i>Anthus trivialis</i> (Linnaeus)		M
716	Yellow-throated Longclaw <i>Macronyx croceus</i> (Vieillot)		B
Family	TURDOIDIDAE (Babblers)		
725	Arrow-marked Babbler <i>Turdoides jardineii</i> (Smith)		R+
726	Black-lored Babbler <i>Turdoides melanops</i> (Hartlaub)		R+
Family	PYCNONOTIDAE (Bulbuls)		
742	Dark-capped Bulbul <i>Pycnonotus tricolor</i> (Hartlaub)		R+
769	Yellow-bellied Greenbul <i>Chlorocichla flaviventris</i> (Smith)		R+
Family	MUSCICAPIDAE (Flycatchers)		
778	Spotted Flycatcher <i>Muscicapa striata</i> (Pallas)		M
	Earliest date: 6th October, 1959; latest date: 4th April, 1966.		
779	Pied Flycatcher <i>Muscicapa hypoleuca</i> (Pallas)		OM
	My only record is of one in Tabora on 11th February, 1965.		
793	Grey Flycatcher <i>Bradornis microrhynchus</i> Reichenow		R+
801	Silver-bird <i>Empidonax semipartitus</i> (Rüppell)		R+
817	Chin-spot Puff-back Flycatcher <i>Batis molitor</i> (Hahn & Küster)		R+
832	Paradise Flycatcher <i>Tchitrea viridis</i> (Müller)		B
Family	TURDIDAE (Thrushes and allies)		
839	Kurriчанe Thrush <i>Turdus libonyanus</i> (Smith)		R
850	Rock-thrush <i>Monticola saxatilis</i> (Linnaeus)		OM
854	Wheatear <i>Oenanthe oenanthe</i> (Linnæus)		M
868	Capped Wheatear <i>Oenanthe pileata</i> (Gmelin)		B?M
871	Red-tailed Chat <i>Cercomela familiaris</i> (Stephens)		R
876	Cliff-chat <i>Thammodactylus cinnamomeiventris</i> (Lafresnaye)		R
883	Whinchat <i>Saxicola rubetra</i> (Linnaeus)		OM
	My only records are of single females on 16th November, 1961 and 25th November, 1964.		
884	White-browed Robin-chat <i>Cossypha heuglini</i> Hartlaub		R+
890	Red-capped Robin-chat <i>Cossypha natalensis</i> Smith		F
910	Red-backed Scrub-robin <i>Erythropygia zambesiana</i> Sharpe		R+
922	Sprosser <i>Luscinia luscinia</i> (Linnaeus)		M
Family	SYLVIIDAE (Warblers)		
924	Whitethroat <i>Sylvia communis</i> Latham		OM
925	Garden Warbler <i>Sylvia borin</i> (Boddaert)		M
926	Blackcap <i>Sylvia atricapilla</i> (Linnaeus)		OM
942	Great Reed Warbler <i>Acrocephalus arundinaceus</i> (Linnaeus)		M
947	Sedge Warbler <i>Acrocephalus schoenobaenus</i> (Linnaeus)		M
955/956	Swamp Warbler <i>Calamocichla sp</i>		R+
959	Willow Warbler <i>Phylloscopus trochilus</i> (Linnaeus)		M
	Earliest date: 7th October, 1959; latest date: 19th March, 1962.		
968	Grey Wren-warbler <i>Calamonastes simplex</i> (Cabanis)		R+
979	Black-breasted Apalis <i>Apalis flavida</i> (Strickland)		R+
997	Red-faced Crombec <i>Sylvietta whytii</i> Shelley		R+
1006	Green-cap Eremomela <i>Eremomela scotops</i> Sundevall		??
1011	Grey-backed Camaroptera <i>Camaroptera brevicaudata</i> ((Cretzschmar)		R+
1016	Zitting Cisticola <i>Cisticola juncidis</i> (Rafinesque)		B
1024	Rattling Cisticola <i>Cisticola chiniana</i> (A. Smith)		B

1026	Trilling Cisticola <i>Cisticola woosnami</i> O. Grant	R
1033	Winding Cisticola <i>Cisticola galactotes</i> (Temminck)	R+
1040	Tabora Cisticola <i>Cisticola angusticauda</i> (Reichenow)	R+
1045	Tawny-flanked Prinia <i>Prinia subflava</i> (Gmelin)	R+
Family HIRUNDINIDAE (Swallows)		
1054	Swallow <i>Hirundo rustica</i> Linnaeus	OM
1058	Pearl-breasted Swallow <i>Hirundo dimidiata</i> Sundevall	R+
1061	Wire-tailed Swallow <i>Hirundo smithii</i> Leach	O
1063	Mosque Swallow <i>Hirundo senegalensis</i> Linnaeus	R+
1065	Striped Swallow <i>Hirundo abyssinica</i> Guérin	R+
1068	Sand Martin <i>Riparia riparia</i> (Linnaeus)	OM
1073	African Rock Martin <i>Ptyonoprogne fulgula</i> (Lichtenstein)	F
1074	House Martin <i>Delichon urbica</i> (Linnaeus)	OM
Family CAMPEPHAGIDAE (Cuckoo-shrikes)		
1081	Black Cuckoo-shrike <i>Campephaga sulphurata</i> (Lichtenstein)	R
1085	White-breasted Cuckoo-shrike <i>Coracina pectoralis</i> (Jardine & Selby)	F
Family DICRURIDAE (Drongos)		
1088	Drongo <i>Dicrurus adsimilis</i> (Bechstein)	R+
Family PRIONOPIDAE (Helmet-shrikes)		
1090	Straight-crested Helmet-shrike <i>Prionops plumata</i> (Shaw)	R+
1095	Retz's Red-billed Shrike <i>Sijmodus retzii</i> (Wahlberg)	F
	Around Tabora the only place where I saw this species was in the Simbo Forest Reserve, fifteen miles from Tabora on the Nzega road, where it appeared to be not uncommon.	
Family LANIIDAE (Shrikes)		
1097	White-crowned Shrike <i>Eurocephalus anguitimens</i> Smith	??
	Although common on the Wembere this species is absent from the immediate vicinity of Tabora. I saw it in an <i>mbuga</i> between Itaga and Mambali, and in another on the way to Sikonge. Neither of these were visited regularly.	
1098/1099	Brubru <i>Nilaus</i> sp.	??
1103	Lesser Grey Shrike <i>Lanius minor</i> Gmelin	M
1104	Fiscal <i>Lanius collaris</i> Linnaeus	R
	I saw this species in two places only—one near the hospital, the other near the Railway Training School—both of which appeared to support one pair each.	
1112	Red-backed Shrike <i>Lanius collaris</i> Linnaeus	M
	Earliest date: 1st November, 1965; latest date: 17th April, 1966.	
1118	Magpie-shrike <i>Urolestes melanoleucos</i> (Jardine)	??
	Seen only on the periphery of the area in the same places as <i>Eurocephalus anguitimens</i> .	
1121	Slate-coloured Boubou <i>Laniarius funebris</i> (Hartlaub)	R+
1128	Black-backed Puff-back <i>Dryoscopus cuba</i> (Shaw)	R
1133	Black-headed Bush-shrike <i>Tchagra senegala</i> (Linnaeus)	R+
1134	Brown-headed Bush-shrike <i>Tchagra australis</i> (Smith)	R+
1138	Sulphur-breasted Bush-shrike <i>Chlorophoneus sulfureopectus</i> (Lesson)	R
1144	Grey-headed Bush-shrike <i>Malaconotus blanchoti</i> Stephens	R+
Family PARIDAE (Tits)		
1155	White-breasted Tit <i>Parus albigentris</i> Shelley	R+
1160	African Penduline Tit <i>Anthoscopus caroli</i> (Sharpe)	F
Family ORIOLIDAE (Orioles)		
1164	Golden Oriole <i>Oriolus oriolus</i> (Linnaeus)	OM
1165	African Golden Oriole <i>Oriolus auratus</i> Vieillot	??
1167	Black-headed Oriole <i>Oriolus larvatus</i> Lichtenstein	R+
Family CORVIDAE (Crows)		
1172	Pied Crow <i>Corvus albus</i> Müller	R+
Family STURNIDAE (Starlings)		
1182	Wattled Starling <i>Creatophora cinerea</i> (Menschen)	M
1183	White-winged Babbling Starling <i>Neocichla gutturalis</i> (Bocage)	F
	Seen only in <i>Brachystegia</i> woodland.	
1184	Violet-backed Starling <i>Cinnyricinclus leucogaster</i> (Boddaert)	B?
	A good deal of local movement certainly occurs but the species is probably resident in the area as a whole.	
1188	Blue-eared Glossy Starling <i>Lamprocolius chalybaeus</i> (Hemprich & Ehrenberg)	F
Family ZOSTEROPIDAE (White-eyes)		
1219	Yellow White-eye <i>Zosterops senegalensis</i> Bonaparte	M

Family	NECTARINIDAE (Sunbirds)		
1233	Beautiful Sunbird <i>Nectarinia pulchella</i> (Linnaeus)		??
1245	Mariqua Sunbird <i>Cinnyris mariquensis</i> Smith		R
1251	Variable Sunbird <i>Cinnyris venustus</i> (Shaw & Nodder)		R+
1263	Scarlet-chested Sunbird <i>Chalcomitra senegalensis</i> (Linnaeus)		R+
1271	Collared Sunbird <i>Anthreptes collaris</i> (Vieillot)		F
Family	PTOCEIDAE (Weavers, Sparrows, Waxbills and allies)		
1286	White-headed Buffalo-weaver <i>Dinemellia dinemelli</i> (Rüppell)		O
	My only record is of a single bird near Kazima Dam on 27th February, 1960.		
1291	Grey-headed Social-weaver <i>Pseudomigrta arnaudi</i> (Bonaparte)		R+
1300	Grey-headed Sparrow <i>Passer griseus</i> (Vieillot)		R+
1306	Chestnut Sparrow <i>Sorella eminibey</i> Hartlaub		M
1311	Speckle-fronted Weaver <i>Sporopipes frontalis</i> (Daudin)		R+
1313	Layard's Black-headed Weaver <i>Ploceus nigriceps</i> (Layard)		B
1319	Masked Weaver <i>Ploceus intermedius</i> Rüppell		B
1359	Red-headed Weaver <i>Anaplectes melanoitis</i> (Lafresnaye)		R+
1360	Red-billed Quelea <i>Quelea quelea</i> (Linnaeus)		M
1362	Cardinal Quelea <i>Quelea cardinalis</i> (Hartlaub)		M
1365	Black-winged Red Bishop <i>Euplectes hordeacea</i> (Linnaeus)		R+
1372	Yellow-mantled Widow-bird <i>Coliuspater macrourus</i> (Gmelin)		B?
1373	White-winged Widow-bird <i>Coliuspater albonotatus</i> (Cassin)		B?
1379	Bronze Mannikin <i>Spermestes cucullatus</i> Swainson		R+
1402	Cut-throat <i>Amadina fasciata</i> (Gmelin)		F
1403	Quail-finch <i>Oryzospiza atricollis</i> (Vieillot)		??
1410	Green-winged Pytilia <i>Pytilia melba</i> (Linnaeus)		R+
1413	Red-billed Fire-finch <i>Lagonosticta senegala</i> (Linnaeus)		R+
1420	Crimson-rumped Waxbill <i>Estrilda rhodopyga</i> Sundevall		F
1421	Zebra Waxbill <i>Estrilda subflava</i> (Vieillot)		??
1427	Black-cheeked Waxbill <i>Estrilda erythronotos</i> (Vieillot)		R
1431	Red-cheeked Cordon-bleu <i>Uraeginthus benegalus</i> (Linnaeus)		R+
1435	Purple Indigo-bird <i>Hypocherax ultramarina</i> (Gmelin)		B?
1441	Pin-tailed Whydah <i>Vidua macroura</i> (Pallas)		B?
1442	Steel-blue Whydah <i>Vidua hypocherina</i> Verreaux		B?
1444	Paradise Whydah <i>Steganura paradisaea</i> (Linnaeus)		B?
Family	FRINGILLIDAE (Finches)		
1448	Yellow-fronted Canary <i>Serinus mozambicus</i> (Müller)		R+
1461	Streaky Seed-eater <i>Serinus striolatus</i> (Rüppell)		O
Family	EMBERIZIDAE (Buntings)		
1469	Golden-breasted Bunting <i>Emberiza flaviventris</i> Stephen		R+
1476	Cinnamon-breasted Rock-bunting <i>Fringillaria tahapisi</i> A. Smith		R+
Additional Species recorded from the Ugalla River Game Reserve (U) and the Wembere (W):			
Family	STRUTHIONIDAE (Ostrich)		
1	Ostrich <i>Strutio camelus</i> Linnaeus		WU
	The species is uncommon at the Ugalla where my only record is of two near Senga on 15th November, 1964.		
Family	ARDEIDAE		
38	Yellow-billed Egret <i>Mesophoyx intermedius</i> (Wagler)		W
Family	FALCONIDAE		
106	Ruppel's Griffon <i>Gyps rüppellii</i> (Brehm)		U
108	Lappet-faced Vulture <i>Torgos tracheliotus</i> (Forster)		WU
129	Pygmy Falcon <i>Poliohierax semitorquatus</i> (A. Smith)		W
146	Martial Eagle <i>Polemaëus bellicosus</i> (Daudin)		W
Family	PHASIANIDAE		
195	Crested Francolin <i>Francolinus sephaena</i> (Smith)		W
209	Grey-breasted Spurfowl <i>Pternistis rufopictus</i> Reichenow		W
Family	RALLIDAE		
223	Corn Crake <i>Crex crex</i> (Linnaeus)		U
Family	HELIORNITHIDAE (Finfoots)		
243	Finfoot <i>Podica senegalensis</i> Hartlaub		U
Family	OTIDIDAE		
250	Kori Bustard <i>Ardeotis kori</i> (Burchell)		W
Family	BURHINIDAE		
263	Water Thicknee <i>Burhinus vermiculatus</i> (Cabanis)		U

Family	CHARADRIIDAE				
279	Grey Plover <i>Charadrius squatarola</i> (Linnaeus)	.	.	.	W
286	Spur-winged Plover <i>Vanellus spinosus</i> (Linnaeus)	.	.	.	W
Family	SCOLOPACIDAE				
310	Turnstone <i>Arenaria interpres</i> (Linnaeus)	.	.	.	W
Family	GLAREOLIDAE				
327	Two-banded Courser <i>Hemerodromus africanus</i> (Temminck)	.	.	.	W
Family	PTEROCLIDIDAE				
369	Chestnut-bellied Sandgrouse <i>Pterocles exustus</i> Temminck & Langier	.	.	.	W
370	Black-faced Sandgrouse <i>Eremialector decoratus</i> (Cabanis)	.	.	.	W
372	Yellow-throated Sandgrouse <i>Eremialector gutturalis</i> (Smith)	.	.	.	W
Family	COLUMBIDAE				
387	Mourning Dove <i>Streptopelia decipiens</i> (Finsch & Hartlaub)	.	.	.	W
Family	CUCULIDAE				
422	Senegal Coucal <i>Centropus senegalensis</i> (Linnaeus)*	.	.	.	U
Family	PSITTACIDAE				
454	Fischer's Lovebird <i>Agapornis fischeri</i> Reichenow	.	.	.	W
Family	ALCEDINIDAE				
466	Giant Kingfisher <i>Megaceryle maxima</i> (Pallas)	.	.	.	U
Family	MEROPIDAE				
482	Madagascar Bee-eater <i>Merops superciliosus</i> Linnaeus.	.	.	.	WU
	Birds seen had the characters of <i>M.s. persicus</i> Pall., regarded as a separate species, <i>M. persicus</i> , by some authorities, e.g. Williams (1963).				
Family	BUCEROTIDAE				
515	Ground Hornbill <i>Bucorvus leadbeateri</i> (Vigors)	.	.	.	WU
Family	PHOENICULIDAE				
527	Northern Scimitar-bill <i>Rhynopomastus miuor</i> (Rüppell)	.	.	.	W
Family	STRIGIDAE				
544	Verreaux's Eagle-owl <i>Bubo lacteus</i> (Temminck)	.	.	.	U
Family	COLIIDAE				
568	Blue-naped Mousebird <i>Colius macrourus</i> (Linnaeus)	.	.	.	W
Family	CAPITONIDAE				
603	D'Arnaud's Barbet <i>Trachyphonus darnaudii</i> (Prévost & Des Murs)	.	.	.	W
Family	APODIDAE				
640	Alpine Swift <i>Apus melba</i> (Linnaeus)	.	.	.	W
Family	TURDIDAE				
879	White-headed Black Chat <i>Thamnodaea arnotti</i> (Tristram)	.	.	.	U
909	Spotted Morning Warbler <i>Cichladusa guttata</i> (Heuglin)	.	.	.	W
Family	SYLVIIDAE				
946	African Reed Warbler <i>Acrocephalus baeticatus</i> (Vicillot)	.	.	.	W
988	Karamoja Apalis <i>Apalis karamojae</i> (Van Someren)	.	.	.	W
Family	HIRUNDINIDAE				
1066	Grey-rumped Swallow <i>Hirundo griseopyga</i> Sundevall	.	.	.	W
Family	STURNIDAE				
1199	Ashy Starling <i>Cosmopsarus unicolor</i> Shelley	.	.	.	W
1216	Superb Starling <i>Spreo superbus</i> (Rüppell)	.	.	.	W
1218	Red-billed Oxpecker <i>Bulphagus erythrorhynchus</i> (Stanley)	.	.	.	WU
Family	PLOCEIDAE				
1285	Red-billed Buffalo-weaver <i>Bubalorius niger</i> Smith	.	.	.	W
1290	Rufous-tailed Weaver <i>Histurgops ruficauda</i> Reichenow	.	.	.	W
1432	Blue-capped Cordon-bleu <i>Uraeginthus cyanocephalus</i> (Richmond)	.	.	.	W

BREEDING DATA

The months in which eggs have been recorded or deduced from records of young birds are shown in Table 3 which is summarized in Table 4. In general, signs of nest building have not been used to deduce the occurrence of eggs though this has been done for two species—Swamp Warbler and Drongo.

TABLE 3
MONTHS IN WHICH EGGS HAVE BEEN RECORDED OR DEDUCED

<i>Species</i>	<i>Months in which eggs recorded or deduced</i>											
	<i>J</i>	<i>F</i>	<i>M</i>	<i>A</i>	<i>M</i>	<i>J</i>	<i>J</i>	<i>A</i>	<i>S</i>	<i>O</i>	<i>N</i>	<i>D</i>
(a) <i>Non-Passerines</i>												
1 Little Grebe		+	+
2 Long-tailed Cormorant	+	+
3 Darter	+	+
4 White-headed Vulture	+
5 Black-shouldered Kite	+
6 Black-chested Harrier-eagle	+
7 Fish Eagle	+	+
8 Gabar Goshawk	+
9 Hildebrandt's Francolin	...	*	+	+	...	+
10 Red-necked Spurfowl	...	*	*	+
11 Lesser Moorhen	+	+	+	+
12 Spotted Thicknee	+	+
13 Jacana	+	+	+	+	+
14 Kittlitz's Sand-plover	*	...	+	+	+	+	+
14 Crowned Lapwing	+	+	+	+	+
16 Senegal Plover	+	+	+	...
17 Blacksmith Plover	+	+
18 Wattled Plover	+	+	+	+	...
19 Temminck's Courser	+	+	...	+	+	+
20 Two-banded Courser	+	+	+	+	+	+
21 Heuglin's Courser	+	+	+	+	+	+
22 Violet-tipped Courser	+	+	+
23 Pratincole	+	+	+
24 Black-faced Sandgrouse	+
25 Ring-necked Dove	+	+	+
26 Laughing Dove	+	+	+	*	+	+	+	+
27 Namaqua Dove	+
28 Emerald-spotted Wood-dove	+	...	+	+	+
29 White-browed Coucal	+	+	+	+	+	+	...
30 Bare-faced-Go-Away-Bird	+	...	+
31 Pied Kingfisher	+	+	+
32 Pigmy Kingfisher	+	...
33 Grey-headed Kingfisher	+	+	...
34 Little Bee-eater	+	+	...
35 African Hoopoe	+
36 Green Wood-hoopoe	*	+
37 Scimitar-bill	+
38 Spotted Eagle-owl	+	+
39 Fiery-necked Nightjar	+
40 Freckled Nightjar	+
41 Gabon Nightjar	+
42 Black-collared Barbet	?	+
43 Spotted-flanked Barbet	+	+
44 Little Swift	+	+	+

TABLE 3 (Continued)

Species	Months in which eggs recorded or deduced											
	J	F	M	A	M	J	J	A	S	O	N	D
(b) <i>Passerines</i>												
45 Broadbill	+	+
46 Fischer's Sparrow-lark	+	+	+
47 African Pied Wagtail	...	+	+	...	+	+	...
48 Richard's Pipit	+
49 Yellow-throated Longclaw	+	+	+
50 Arrow-marked Babbler	...	*	+	+	+	+	+
51 Black-lored Babbler	+
52 Dark-capped Bulbul	...	+	+	+	+	+	+	...
53 Yellow-bellied Greenbul	+	+	+	+
54 Grey Flycatcher	+	+	+	...	+	+	...	+	+	+
55 Silver-bird	+	+	...
56 Chin-spot Puff-back Flycatcher	+	+	+
57 Paradise Flycatcher	+	+	+
58 White-browed Robin-chat	+	+
59 Red-backed Scrub-robin	...	+	+	+	+	+
60 Swamp Warbler	+	+	...
61 Grey-wren Warbler	...	+	+	+	+	+	+
62 Black-breasted Apalis	+	+	+
63 Red-faced Crombec	+
64 Grey-backed Camaroptera	+	+
65 Zitting Cisticola	+
66 Rattling Cisticola	...	+
67 Winding Cisticola	+	+	+	+
68 Tabora Cisticola	...	+
69 Tawny-flanked Prinia	+	+
70 Pearl-breasted Swallow	...	+	+	+	+	+	+
71 Mosque Swallow	+	+	+	+
72 Striped Swallow	+
73 Drongo	+	...
74 Straight-crested Helmet-shrike	+
75 Slate-coloured Boubou	+	...	+	+	+	+	+	+
76 Black-headed Bush-shrike	...	+	+	+	+
77 Brown-headed Bush-shrike	+	+	...	+	+	+	+
78 Grey-headed Bush-shrike	+	+	...
79 White-breasted Tit	+	+
80 Black-headed Oriole	+	+	+	+
81 Pied Crow	+	+	...
82 Superb Starling	...	*	*	*	*	*	+
83 Variable Sunbird	+	...	+	+	+	+	...	+
84 Scarlet-chested Sunbird	+
85 Grey-headed Social Weaver	+	+	...	+
86 Grey-headed Sparrow	...	+	+	+	+
87 Speckle-fronted Weaver	...	+	+	+	+
88 Layard's Black-headed Weaver	*	+	+	*	*
89 Masked Weaver	+
90 Red-headed Weaver	+	+	...	+	+
91 Black-winged Red Bishop	...	+	+	+	+

TABLE 3 (Continued)

Species		Months in which eggs recorded or deduced											
		J	F	M	A	M	J	J	A	S	O	N	D
(b) <i>Passerines</i> (Continued)													
92	Bronze Mannikin	...	...	...	...	+	...	...	...	...	...	...	...
93	Green-winged Pytilia	+	+	+	+	+	...	...	+	...	+	...	...
94	Red-billed Fire-finch	+	+	...	...	...	...	...	...	...	...	...	...
95	Red-cheeked Cordon-bleu	+	+	+	+	+	...	...	...	...	...	...	...
96	Yellow-fronted Canary	...	+	...	...	+	+	...	...	...	...	...	...
97	Golden-breasted Bunting	+	+	+	...	...	...	...	...	...	+	+	+
98	Cinnamon-breasted Rock-bunting	...	...	...	+	+	...	+	...	...	...	...	...

+ personal records; * records from Thomas (1960)

TABLE 4
NUMBERS OF SPECIES BREEDING IN EACH MONTH

	WHOLE AREA				AROUND TABORA					
	Total	Non-pass.		Pass.		Total	Non-pass.		Pass.	
		No.	%	No.	%		No.	%	No.	%
J	24	5	21	19	79	24	5	21	19	79
F	30	6	20	24	80	29	6	21	23	79
M	28	13	46	15	54	27	13	48	14	52
A	28	8	29	20	71	27	8	30	19	70
M	36	13	37	23	63	32	10	31	22	69
J	22	12	55	10	45	15	6	40	9	60
J	14	9	54	5	36	9	5	56	4	44
A	19	14	74	5	26	14	9	64	5	36
S	24	17	71	7	29	18	12	67	6	33
O	31	16	52	15	48	27	12	44	15	56
N	27	6	22	21	78	25	4	16	21	84
D	21	1	5	20	95	21	1	5	20	95

The systematic notes that follow amplify the information given in Table 3, in particular giving full data for those species for which I have few records.

LONG-TAILED CORMORANT AND DARTER

In 1960 there was a mixed colony of these two species nesting in dead trees in the centre of Igombe Dam. I was not able to visit this colony in subsequent years as no boat was available.

WHITE-HEADED VULTURE

My sole record is of a bird apparently incubating on 25th October, 1966.

BLACK-SHOULDERED KITE

Coition followed by the carrying of sticks was seen on 15th May, 1961. The nest was later located in the District Commissioner's garden.

BLACK-CHESTED HARRIER-EAGLE

Two eyries were found, about 5 miles apart. Birds were seen apparently incubating in October 1961 and 1966.

FISH EAGLE

One apparently incubating in an eyrie at Igombe Dam in late June and early July 1965.

GABAR GOSHAWK

A nest found by Mr. I. H. Dillingham contained young in late September 1961.

HILDEBRANDT'S FRANCOLIN

Occurs on and around rocky hills. C/8 found on 16th May, 1965 hatched between 3rd and 4th June. A possibly incomplete C/4 found on 12th May, 1966 had been eaten by 14th May. Downy chicks were seen in late July 1966, and young with quills just appearing on 16th September, 1966.

RED-NECKED SPURFOWL

I failed to find any nests of this very common species. Mr. H. Saidi found what was probably a nest of this species in late April 1961.

LESSER MOORHEN

A nest containing one egg on 14th March, 1960 had the surrounding reed stems worked into a canopy over the nest. The bases of the stems had been brought together by pieces of rush "tied" in "half-granny" knots. This nest was flooded out.

SPOTTED THICKNEE

I found three nests: C/2 on 2nd October, 1960 hatched on 17th October; C/1 on 18th October, 1961; C/1 on 10th October, 1965. The latter nest was among tall tussocks of dead grass on the Wembere at least a mile from the nearest scrub.

JACANA

The latest date on which I saw eggs was 27th October, 1960 at Kazima Dam; at this time of year there is a considerable influx of non-breeding Jacanas.

On 5th June, 1962 a walking parent was seen carrying a chick tucked into the flank feathers under one wing from which the chick's legs dangled down and out.

C/3 and C/4 appear to be equally common.

KITTLITZ'S SAND-PLOVER

The margins of all three Tabora dams have been used for breeding when sufficiently sandy patches were present. It is very common on the Wembere where no nests or small young were seen during October, November and January visits. All nests found had C/2.

Observations from a hide indicated that eggs are covered whenever the bird leaves the nest and that covering is not confined to departures stimulated by the presence of potential enemies. On returning to the nest the bird makes gentle probing movements with its bill as if to locate the exact position of the eggs which are then uncovered by kicking movements with the breast pushed down onto the pile of sand covering the eggs.

CROWNED LAPWING

I found no nests around Tabora and consider it probable that it does not do so, though there are a few suitable areas. It is very common on the Wembere but considerably less so at the Ugalla where nesting appears to start later.

C/2 appears to be the most frequent clutch size.

SENEGAL PLOVER

All breeding records are from the Ugalla where C/3 appears to be commoner than C/2. Most clutches appear to be laid in October.

BLACKSMITH PLOVER

All my breeding records are from the Wembere where nests were usually sited within 20 yards of water.

On 10th July, 1962 I was photographing a bird at a nest with chipping eggs over which ants were swarming. One of the eggs had a large hole through which the ants were entering to attack the chick. The parent showed great agitation at the presence of the ants and eventually picked up the egg which the ants were entering, carried it to the water's edge and dropped it in the water. Normal incubation was then resumed.

WATTLED PLOVER

During the rainy season flocks of up to about 50 birds occur in and around paddy fields near Tabora.

All my breeding records are from the Ugalla where my latest record is of C/4 on 1st November, 1964. C/4 appears to be the usual clutch, though I have seen several broods of three chicks.

TEMMINCK'S COURSER

All breeding records are from the Wembere and Ugalla. Both sexes incubate.

TWO-BANDED COURSER

All records from the Wembere where the species is common. About forty nests, each with C/1, were found in all.

Keast and Marshall (1954) and Serventy and Marshall (1957) have produced evidence that the breeding of Australian desert birds is geared to rainfall and that such birds breed only when adequate rain falls. Winterbottom visited a district of the western karoo area of South Africa where a five year drought had ended a month earlier and another district where the drought had continued. He found Two-banded Coursers with eggs and/or young in the first locality but no sign of sexual activity in the birds of the second, though it is not stated whether this species was present in both areas. From these and similar observations Winterbottom and Rowan (1968) concluded that this courser is one of several arid country species whose breeding is stimulated by the onset of rain.

Maclean (1967) found that, in the Kalahari, breeding occurred throughout the year with no indications of its onset being stimulated by rain. My Wembere observations refer to the dry season as the area is virtually inaccessible during the rains. I cannot, therefore, say whether breeding takes place in well drained areas kept bare by heavy grazing. However, this possibility is supported by my finding a nest in the rainy season on 16th April, 1965 in Lake Manyara National Park.

Although many more observations are needed before any definite conclusions can be drawn, it would appear that Winterbottom's apparent correlation between rainfall and breeding might well be the result of insufficient sampling during dry conditions.

HEUGLIN'S COURSER

Common around Tabora and on the Wembere. A total of fifteen nests were found, all with C/2. In all nests the eggs were about three quarters buried in the substrate. No birds observed from a hide were seen attempting to turn the eggs during incubation which is carried out by both sexes.

At a nest found on 3rd September, 1966 the non-sitting bird could usually be found within 20 yards of the nest accompanied by two fledged young. These remained in the close vicinity of the nest until the eggs hatched on 25th September, after which I lost contact with the group.

VIOLET-TIPPED COURSER

This species appears to be migratory, arriving in the Tabora area in the second half of May and early June. At this time of year the birds can often be heard calling in flight over the town and, at night, may be seen in gardens and even the streets of the town.

My four breeding records are: At the Ugalla, C/3 found on 1st September, 1963 hatched on 20th September; C/2 found on 19th September, 1963 hatched on 23rd September; three young about 2½ weeks old seen on 23rd October, 1964; at Tabora C/3 found on 9th October, 1966 hatched before 16th October.

The Ugalla nests were in large open glades though within 20 yards of patches of trees and bushes; the Tabora nest was in open secondary growth such as is often used by Heuglin's Courser.

PRANTINCOLE

All breeding records are from the Wembere.

BLACK-FACED SANDGROUSE

My sole record is of a pair with three fledged young on the Wembere on 12th July, 1961.

NAMAQUA DOVE

A nest with two well grown young at Kazima Dam on 9th October, 1963 is my only record.

BARE-FACED-GO-AWAY-BIRD

Two records only: C/2 on 13th August, 1960, and a nest with at least one small young on 20th June, 1965.

PIGMY KINGFISHER

An occupied nest, probably with eggs, at Tabora on 18th November, 1962. One seen carrying food on 28th November, 1966.

GREY-HEADED KINGFISHER

Nests with young birds 18th November, 1962 and 8th December, 1965. Nest with eggs 16th October, 1966; eggs hatched on 4th or 5th November.

LITTLE BEE-EATER

Eggs must be laid in late September and October as young are in the nests throughout November. I have no records that suggest egg laying before late September or after late October and I think in Tabora the species has a very restricted breeding season.

SOUTH AFRICAN HOOPOE

My only record is of a nest with large young in the hollow branch of an old mango tree in a Tabora garden on 13th October, 1966.

GREEN WOOD-HOOPOE

A nest with young on 5th November, 1959 is my only record.

SCIMITAR-BILL

A nest with large young found by Mr. J. A. S. Mackenzie-Grieve in November 1964 is my only record.

FIERY-NECKED NIGHTJAR

Two young, almost fledged on 20th November, 1966, were almost certainly of this species and constitute my only breeding record.

FRECKLED NIGHTJAR

C/2 laid on bare rock among burnt grass tussocks and *Vellozia* on a rocky hill was found on 16th September, 1966. These eggs hatched on the 24th and 25th September, but the chicks were attacked and killed by ants as soon as they emerged.

GABON NIGHTJAR

A male dissected on 2nd June, 1966 had very small testes. C/2 found on 10th September, 1966 hatched on 18th September.

BLACK-COLLARED BARBET

A pair were showing interest in a hole three feet above the ground on 24th April, 1966 but their behaviour did not conclusively indicate breeding. A pair probably had eggs on 25th October, 1966 as the presumed female stayed inside the hole while the mate vigorously chased two Black-throated Honey-guides that were showing great interest in the barbet's nest. The nesting stump was destroyed by fire.

BROADBILL

I saw this species only in the Quarry Area where it was remarkably elusive. A nest with C/2 was found on 27th November, 1964, and another being built on 16th November, 1966; this contained one egg on 30th November and C/2 on 2nd December, 1966.

BLACK-LORED BABBLER

My only record is of a nest found by Mr. I. H. Dillingham on 12th April, 1962 containing C/4, all of which had hatched by 18th April. Communal feeding of the young was observed at this nest (Reynolds 1965 b).

DARK-CAPPED BULBUL

Although the peak of breeding appears to be in late October and November I suspect that smaller numbers may nest throughout the year.

On 7th June, 1966 there was an occupied nest in a *Jacaranda* too high for inspection; presumably the same pair had built another high nest in a neighbouring tree that was occupied on 15th October, 1966.

Two nests found in November 1959 each contained a blue egg presumed to have been laid by a cuckoo (*Clamator* sp?); both were lost to predators.

SILVER-BIRD

This species is common on the Wembere; a few pairs are found in *mbugas* around Tabora where fledged young were seen on 4th February, 1965. On the Wembere a bird was believed to be incubating in the old nest of a Rufous-tailed Weaver on 8th November, 1964, and C/2 was found in another Rufous-tailed Weaver's nest on 7th January, 1965.

PARADISE FLYCATCHER

All nests in Tabora were found in the Quarry Area where building usually starts during the second week of November. Egg losses were very high but I failed to obtain evidence for either repeat nests or second broods.

On one occasion a female was observed singing near the nest.

CAPPED WHEATEAR

Territorial behaviour involving, apparently, paired birds can be observed on the open

country near the abattoir during May and June but I never obtained evidence that the birds were breeding.

WHITE-BROWED ROBIN-CHAT

This is rather an uncommon bird around Tabora though three or four pairs occur in the Quarry Area where all my nests were found. The first nest found contained C/2 on 17th November 1964. In 1965 a new nest was being built on the remains of this nest on 29th October and contained C/2 on 2nd November. In 1966 the nest in this territory was about two yards from the above site and contained C/2 on 10th November, hatching on 14th November. In another territory C/3 was found on 19th December, 1965.

SWAMP WARBLER

A pair were carrying nesting material into tall bulrushes at Kazima Dam on 7th April, 1963.

BLACK-BREASTED APALIS

A nest being built on 7th April, 1963 contained one egg on 13th April and C/2 on 21st April. Young were being fed in a nest about 20' above the ground on 5th January, 1966. Another pair were building at this time but deserted before laying.

RED-FACED CROMBEC

My only record is of a nest found with C/2 on 13th May, 1962 by Mr. I. H. Dillingham.

GREY-BACKED CAMAROPTERA

The behaviour of the birds suggests that breeding is confined to the period November to February. Mr. Dillingham showed me a nest with C/2 in late November 1961; I found a nest with C/2 on 2nd January and another with two young on 5th January, 1966.

ZITTING CISTICOLA

Mr. Dillingham found a nest in March 1962. In 1966 I observed "zitting" from mid-January until late April but failed to find any nests.

RATTLING CISTICOLA

Nest with three young on 6th March, 1962. C/3 found on 17th February, 1965; the young flew between the 4th and 5th of March.

TABORA CISTICOLA

Two nests found with young in the first week of March, one in 1965 and the other in 1966.

PEARL-BREASTED SWALLOW

The only place where I saw this species was in the immediate vicinity of Tabora Boys' School where there were two nesting sites. While it remains intact the same cup is used for successive broods; it is also used for roosting. The dry season broods are of interest, as Moreau (1964) implies that *Hirundo griseopyga* is the only species of swallow that nests in the dry season.

STRIPED SWALLOW

In Tabora, houses are not used for nesting. A few nests are built on the underside of large rocks supported by other boulders but the main nesting site is in drainage culverts passing under the roads.

DRONGO

This species is fairly common around Tabora but the only evidence that I have for breeding is a pair building on 5th November, 1959.

STRAIGHT-CRESTED HELMET-SHRIKE

The only nest found had C/2 on 8th October, 1966. The eggs hatched on 20th October but the young had been eaten by the 21st. Three birds were in attendance at this nest.

GREY-HEADED BUSH-SHRIKE

Only two nests found, both in a *Strychnos* about 9' above the ground. The first was found on 21st November, 1964 with three small young and the second on 14th November, 1965 also with three small young.

SCARLET-CHESTED SUNBIRD

Additional records for this species that undoubtedly has a longer season than indicated in Table 3 were unfortunately lost.

SPECKLE-FRONTED WEAVER

In Mackworth-Praed and Grant (1955) the nest of this weaver is described as "... a roughly made sphere of grass with a side entrance usually suspended from the end of a bough ten to fifteen feet from the ground". I have seen many nests of this species and none of them has corresponded with this description. The nest is a rather coarse domed structure with a long entrance funnel at one side placed along, but not dependent from, a branch of, usually, an *Acacia*. The chamber is lined with feathers. Around Tabora most nests are between 6' and 9' above the ground.

BLACK-WINGED RED BISHOP

The onset of breeding is closely correlated with the availability of suitably long grass for nest sites which in turn is influenced by both the date when the rains start and the amount of rain in November, December and January.

C/3 is the commonest clutch size. In 1960 a nest was found in which the eggs were blue with fine black spots, and in 1963 one in which the eggs were white. The young are fed mostly by regurgitation but occasionally small insects (usually larvae) are brought.

GOLDEN-BREASTED BUNTING

C/2 appears to be about three times as common as C/3.

CINNAMON-BREASTED ROCK-BUNTING

During the breeding season the bird is confined to rocky hills. Song occurs from January to August though no nests have been found before April (however, I have not watched intensively in January, February and March so nesting may well start earlier). Most hills have only enough suitable habitat to support one or two pairs but one near Inara (about 9 miles from Tabora) had five or six pairs. Two nests were only about 20 yards apart. C/3 is the usual clutch; two C/4 have been found but in each case only three eggs hatched. Egg and nestling losses are high, snakes probably being the main predators though fires are also a hazard. Both parents feed the young by regurgitation: I never saw food being brought in the bill.

DISCUSSION

Moreau (1950), surveying the rather inadequate data then available on the breeding seasons of African birds, concluded that five breeding season patterns could be recognised:

1. the big raptors and scavengers, laying in the middle of the dry season;
2. some ground birds, such as nightjars, which tend to lay in the rains in areas where grass fires are not an extensive risk, but elsewhere to lay in the dry season after the grass fires are over;
3. the birds dependent on tall grass which necessarily wait until well after the rains have started, both for nesting sites and seeds;

4. the water birds which tend to nest when watery habitats have increased in extent as a result of the rains;
5. most other birds (nearly all dependent wholly or mainly on insects) which tend to nest early, beginning with the pre-rains flush of new foliage and insects.

In Moreau (1966) he concludes that the new data published since then in general support the generalisations quoted above. My opinions as to how my own data fit these generalisations are as follows:

Category 1

My data are far too scanty to warrant much discussion. The records for Black-shouldered Kite, Fish Eagle and Gabar Goshawk (though two of these hardly count as "big" raptors) conform but the Black-chested Harrier-eagle and White-headed Vulture appeared to lay towards the end of the dry season. Furthermore in *Iringa* (where I am at present working) I have found Kites and Tawny Eagles starting to nest at the very end of the dry season.

Category 2

I think that the individual requirements of ground nesting birds are so diverse that generalisation is apt to obscure too many ecological differences. "Ground nesting" is also a vaguer term than might at first be thought: most workers would agree that it would apply, for example, to both Heuglin's Courser and the Yellow-throated Long-claw but the siting of the latter's nest in clumps of grass makes it less vulnerable to flooding than the former's. As regards plovers, especially Senegal Plover and Crowned Lapwing, and coursers, especially the Violet-tipped and Temminck's, I would say that suitable conditions for nesting can be created as a result of burning, or of overgrazing, or a combination of both factors. I consider that this can be concluded from a comparison of conditions on the Wembere (heavily overgrazed) and the Ugalla (subject to fires from July onwards); Crowned Lapwings breed from May onwards on the Wembere while nests have only been found in August and September on the Ugalla.

Category 3

My experience with the Black-winged Red Bishop and the cisticolas, especially *galactotes* is in complete conformity with the generalisation.

Category 4

I consider this a rather unsatisfactory category on much the same grounds as Category 2: there are great differences in the nesting sites of water birds. My rather limited data for this group do, however, tend to conform.

Category 5

There is no doubt that a number of species start nesting well before the onset of the rains, though I think it equally true that the timing of many of these "early" nests is such that the first heavy storms tend to coincide either with the presence of young in the nest or with recently fledged young. Although the leaf flush is so obvious my (admittedly somewhat subjective) impression is that there is no marked flush of insects, or for that matter arthropods in general, until after at least three or four heavy downpours. This is certainly true for beetles, termites, millipedes, centipedes and also mollusca.

As regards evidence for a widespread pre-rains start of nesting I would conclude that, in general, my data do not support the generalisation. This statement requires amplification as I have recorded 27 species with eggs in October (Table 4). Three of these—Heuglin's and Violet-tipped Courser and Spotted Thicknee—are dry season nesters hatching their eggs well before the start of the rains, while the bulk of the rest lay

at the end of the month so that young are likely to coincide with the November storms. The increase to 29 species in February is mainly due to conditions becoming suitable for Category 3 birds.

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